

# PS-HX500

## SERVICE MANUAL

Ver. 1.0 2016.03

US Model  
Canadian Model  
AEP Model  
UK Model



### SPECIFICATIONS

#### **Motor and Platter**

<b>Drive system</b>	Belt-drive
<b>Motor</b>	DC motor
<b>Platter</b>	296 mm dia. (aluminum die-cast)
<b>Speeds</b>	33 1/3 and 45 rpm, 2 speed
<b>Wow and flutter</b>	Less than 0.25% (WRMS)
<b>S/N ratio</b>	More than 50 dB (DIN-B) with the supplied cartridge

#### **Tone Arm**

<b>Type</b>	Dynamic balanced straight-shaped with soft damping control
<b>Effective arm length</b>	221 mm

#### **USB Connectivity**

<b>Output port</b>	USB Type B
	USB 2.0

#### **Cartridge**

<b>Type</b>	MM
<b>Stylus pressure</b>	3 g
<b>Output level</b>	2.5 mV

#### **General**

<b>Power supply</b>	DC 5 V 2.0 A (AC adaptor)
<b>Power consumption</b>	3 W
<b>Dimensions</b>	430 x 104 x 366 mm (16 7/8 x 4 1/8 x 14 3/8 in) (width/height/depth)
<b>Weight</b>	Approx. 5.4 kg (11.9 lb 19.5 oz)

#### **AC adaptor**

##### **HK-AR-050A200-US for the U.S.A. and Canada**

<b>Input</b>	AC 100-240 V 0.35 A 50/60 Hz
<b>Output</b>	DC 5 V 2.0 A

##### **HK-AR-050A200-EU for European countries**

<b>Input</b>	AC 100-240 V 0.35 A 50/60 Hz
<b>Output</b>	DC 5 V 2.0 A

##### **HK-AR-050A200-GB for United Kingdom**

<b>Input</b>	AC 100-240 V 0.35 A 50/60 Hz
<b>Output</b>	DC 5 V 2.0 A

#### **Supplied accessories**

- Platter (with drive belt) (1)
- Rubber mat (1)
- Counterweight (1)
- Dust cover (1)
- 45 rpm adaptor (1)  
Place the adaptor on the spindle for playing a 17 cm (7 inch) vinyl record.
- Dust cover hinges (2)
- AC adaptor (1)
- PHONO cables with grounding wires (1)
- USB cable (1)
- Operating Instructions
- Warranty card
- Owner Registration Card (for customers in the USA)

Design and specifications are subject to change without notice.

## STEREO TURNTABLE SYSTEM

9-896-278-01

2016C33-1  
© 2016.03

Sony Video & Sound Products Inc.  
Published by Sony Techno Create Corporation

**SONY®**

**System requirements****Windows**

Operating systems:

- Windows 7 (32/64 bit)
- Windows 8 (32/64 bit)
- Windows 8.1 (32/64 bit)
- Windows 10 (32/64 bit)
- (The latest service pack is required.)
- CPU: Intel Core2 Processor 1.6 GHz or higher
- Memory: 1 GB or larger
- Screen resolution: 1024 x 768 or higher

**Mac**

Operating systems:

- Mac OS X 10.9
- Mac OS X 10.10
- Mac OS X 10.11
- Screen resolution: 1024 x 768 or higher

Any operating systems other than the listed ones are not supported.

**Note**

This application is not assured to work successfully:

- on every computer with one of the listed operating systems
- on a homemade computer
- on a computer with a user-upgraded operating system
- on a multi-boot computer
- with the power-saving features of the computer: System Suspend or Sleep (Standby)

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**Polarity of DC output of the AC adaptor****TABLE OF CONTENTS**

<b>1. SERVICING NOTES .....</b>	3
<b>2. DISASSEMBLY</b>	
2-1. Disassembly Flow.....	9
2-2. Hinge Assy, Dust Cover Assy.....	9
2-3. Counter Weight .....	10
2-4. Belt, Platter .....	10
2-5. Case.....	11
2-6. MAIN Board.....	11
2-7. Foot Assy, Cover_Motor.....	12
2-8. Switch Knob .....	12
2-9. Motor Assy (M1) .....	13
2-10. SW Board.....	14
2-11. Tone Arm Assy.....	15
<b>3. ELECTRICAL ADJUSTMENT .....</b>	15
<b>4. DIAGRAMS</b>	
4-1. Block Diagram.....	16
4-2. Printed Wiring Board - SW Board - .....	17
4-3. Printed Wiring Board - MAIN Board - .....	18
4-4. Schematic Diagram - MAIN Section (1/4) - .....	19
4-5. Schematic Diagram - MAIN Section (2/4) - .....	20
4-6. Schematic Diagram - MAIN Section (3/4) - .....	21
4-7. Schematic Diagram - MAIN Section (4/4) - .....	22
<b>5. EXPLODED VIEWS</b>	
5-1. Overall Section .....	23
5-2. Cabinet Section .....	24
<b>6. ACCESSORIES .....</b>	25

**SAFETY-RELATED COMPONENT WARNING!**

**COMPONENTS IDENTIFIED BY MARK ▲ OR DOTTED LINE WITH MARK ▲ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION.  
REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

**ATTENTION AU COMPOSANT AYANT RAPPORT  
À LA SÉCURITÉ!**

**LES COMPOSANTS IDENTIFIÉS PAR UNE MARQUE ▲ SUR LES DIAGRAMMES SCHÉMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.**

## SECTION 1 SERVICING NOTES

The SERVICING NOTES contains important information for servicing. Be sure to read this section before repairing the unit.

### UNLEADED SOLDER

Boards requiring use of unleaded solder are printed with the lead-free mark (LF) indicating the solder contains no lead.

**(Caution:** Some printed circuit boards may not come printed with the lead free mark due to their particular size)



### : LEAD FREE MARK

Unleaded solder has the following characteristics.

- Unleaded solder melts at a temperature about 40 °C higher than ordinary solder.

Ordinary soldering irons can be used but the iron tip has to be applied to the solder joint for a slightly longer time.

Soldering irons using a temperature regulator should be set to about 350 °C.

**Caution:** The printed pattern (copper foil) may peel away if the heated tip is applied for too long, so be careful!

- Strong viscosity

Unleaded solder is more viscous (sticky, less prone to flow) than ordinary solder so use caution not to let solder bridges occur such as on IC pins, etc.

- Usable with ordinary solder

It is best to use only unleaded solder but unleaded solder may also be added to ordinary solder.

### DESTINATION ABBREVIATIONS

The following abbreviations for model destinations are used in this service manual.

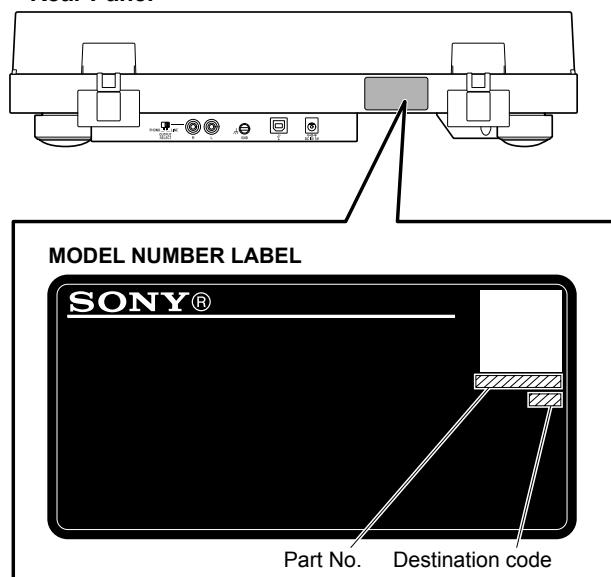
- Abbreviation

CND : Canadian model

### MODEL IDENTIFICATION

Distinguish by Part No. and Destination code of model number label stuck on the rear side of a main unit.

#### – Rear Panel –



Destination	Part No.	Destination code
US and Canadian models	4-585-313-0□	UC2
AEP model	4-585-313-1□	CEL
UK model	4-585-313-2□	CEK

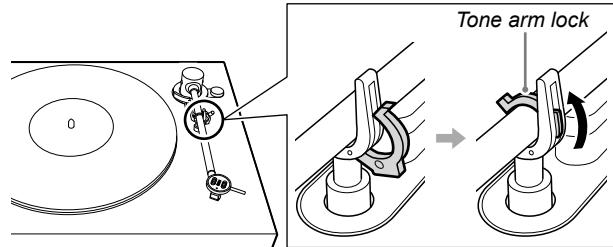
### NOTE OF REPAIRING THE BOARDS

When the board installed by this unit is defective, replace the complete mounted board. Individual electrical parts that mounted on the each boards cannot be replaced.

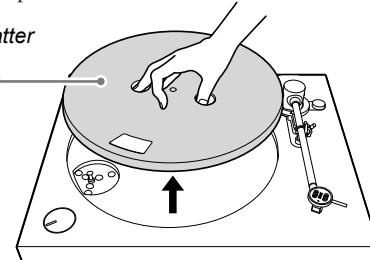
### NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT

Before reversing the main unit, please do the following measure always. There is a possibility of damage if you did not the following measure.

- Tone arm lock



- Remove the platter



## ASSEMBLING THE TURNTABLE

**Note**

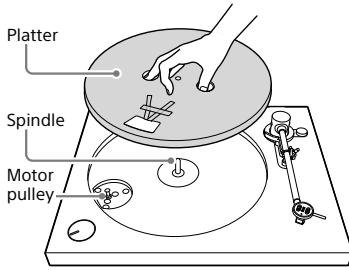
Do not connect your turntable to a power outlet with the AC adaptor until you are finished with assembly.

### Precautions on placement

- Place the unit on a level surface.
- Avoid placing the unit near electrical appliances (such as a television, hair dryer, or fluorescent lamp) which may cause hum or noise.
- Place the unit where it will not be subject to any vibration, such as from speakers, slamming of doors, etc.
- Keep the unit away from direct sunlight, extremes of temperature, and excessive dust and moisture.
- Keep the unit away from electronic devices that may emit radio waves or electromagnetic noise.

### Attaching the platter

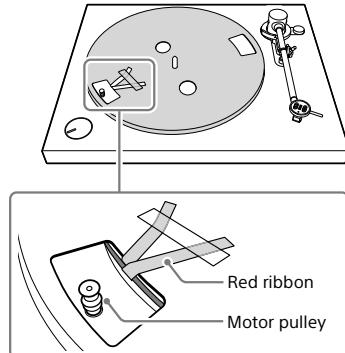
- 1** Place the platter on the spindle.  
Keep the platter level while placing it on the spindle.



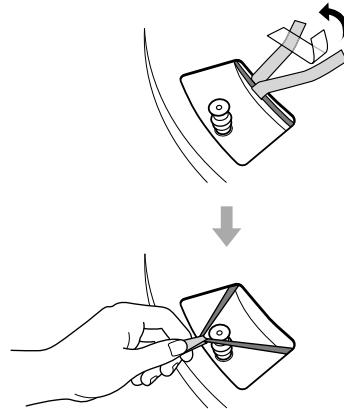
**Note**

Hold the platter firmly so as not to drop the platter as it may cause personal injuries or damage to your turntable.

- 2** Turn the platter to the position where you can see the motor pulley through the rectangular hole with the tips of the red ribbon taped on the platter.



- 3** Peel off the adhesive tape, pull and hold the red ribbon, and then hook the drive belt around the motor pulley.



**Note**

- Do not twist the drive belt.
- Be sure to remove it once you have hooked the drive belt around the motor pulley.

- 4** Place the rubber mat onto the platter.

**Note**

Make sure that the chamfered side of the rubber mat faces upward.  
The back side of the rubber is indicated by the SONY imprint.

## REPLACING THE STYLUS

The stylus may become worn out, damaged, or dirty beyond cleaning depending on your use case. In such a case, replace the stylus.

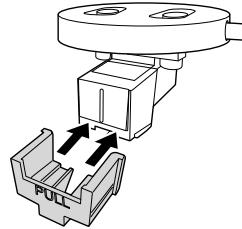
**Note**

Be sure to attach the stylus protective cover before you replace the stylus so as not to harm your fingertips or damage the stylus.

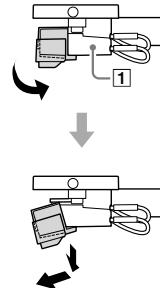
### To remove the stylus

- 1** Turn off your turntable and the connected audio device and unplug the AC adaptor from the power outlet.

- 2** Attach the stylus protective cover to the stylus.



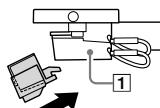
- 3** Hold the cartridge body (1) with one hand, grasp the stylus with the other, and then pull the stylus in the direction of the arrow to remove it from the cartridge body.



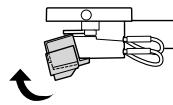
### To attach the stylus

- 1** Attach the stylus protective cover to the spare stylus.

- 2** Hold the cartridge body (1) with one hand and then insert the tab on the spare stylus into the receptacle on the cartridge body.



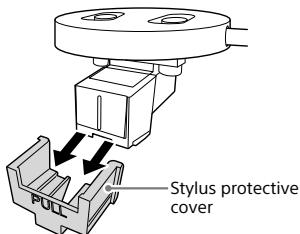
- 3** Push the stylus in the direction of the arrow until it clicks into place.



## ADJUSTING THE TONE ARM BALANCE

Adjust the tone arm balance to keep the tone arm horizontally balanced (zero balance) so that proper stylus pressure is exerted on the vinyl record.

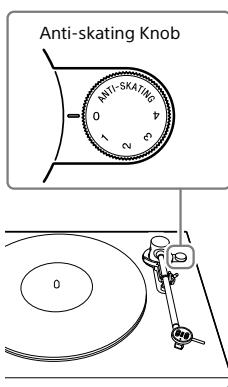
### 1 Remove the stylus protective cover.



**Note**

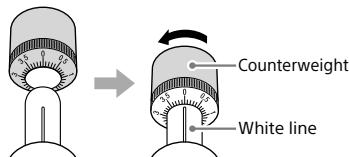
Remove the stylus protective cover with care so as not to damage the stylus.

### 2 Make sure that the gauge number "0" on the anti-skating knob is aligned with the reference line.



### 3 Attach the counterweight onto the back of the tone arm.

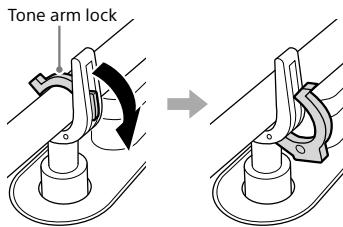
Slightly push in the counterweight and rotate in the direction of the arrow until the face of the gauge ring comes close to the white line on the tone arm.



**Tip**

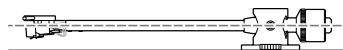
You can rotate the counterweight clockwise to move it outward or counterclockwise (in the direction of the black arrow above) to move it inward.

### 4 Unlock the tone arm lock and raise the tone arm from the tone arm rest.



### 5 Rotate the counterweight clockwise or counterclockwise until the tone arm is horizontally balanced.

You may find it easier to adjust the tone arm balance that you rotate the counterweight a little at a time and take your hands off to see if the tone arm is horizontally balanced.



**Note**

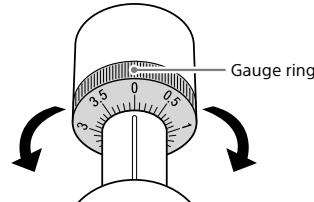
Keep the tip of the stylus untouched with the rubber mat or the platter while adjusting the tone arm balance.

### 6 Put the tone arm back onto the tone arm rest.

## ADJUSTING THE STYLUS PRESSURE AND THE ANTI-SKATING FORCE

Once the tone arm is horizontally balanced, adjust the stylus pressure and the anti-skating force.

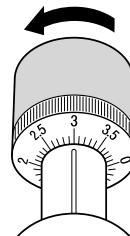
### 1 Rotate only the gauge ring on the counterweight to bring the gauge number "0" on the ring into alignment with the white line on the tone arm.



**Note**

Do not rotate the counterweight along with the gauge ring.

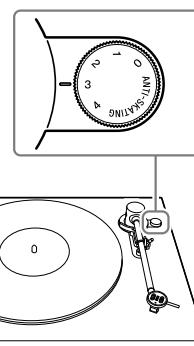
### 2 Rotate the counterweight counterclockwise to bring the gauge number "3" on the gauge ring into alignment with the white line on the tone arm.



**Tip**

An appropriate stylus pressure value is recommended for every cartridge. To protect the stylus and the record against damage, adjust the stylus pressure to the recommended value. On your turntable, set the stylus pressure to "3."

### 3 Rotate the anti-skating knob to bring the gauge number "3" into alignment with the reference line.



**Tip**

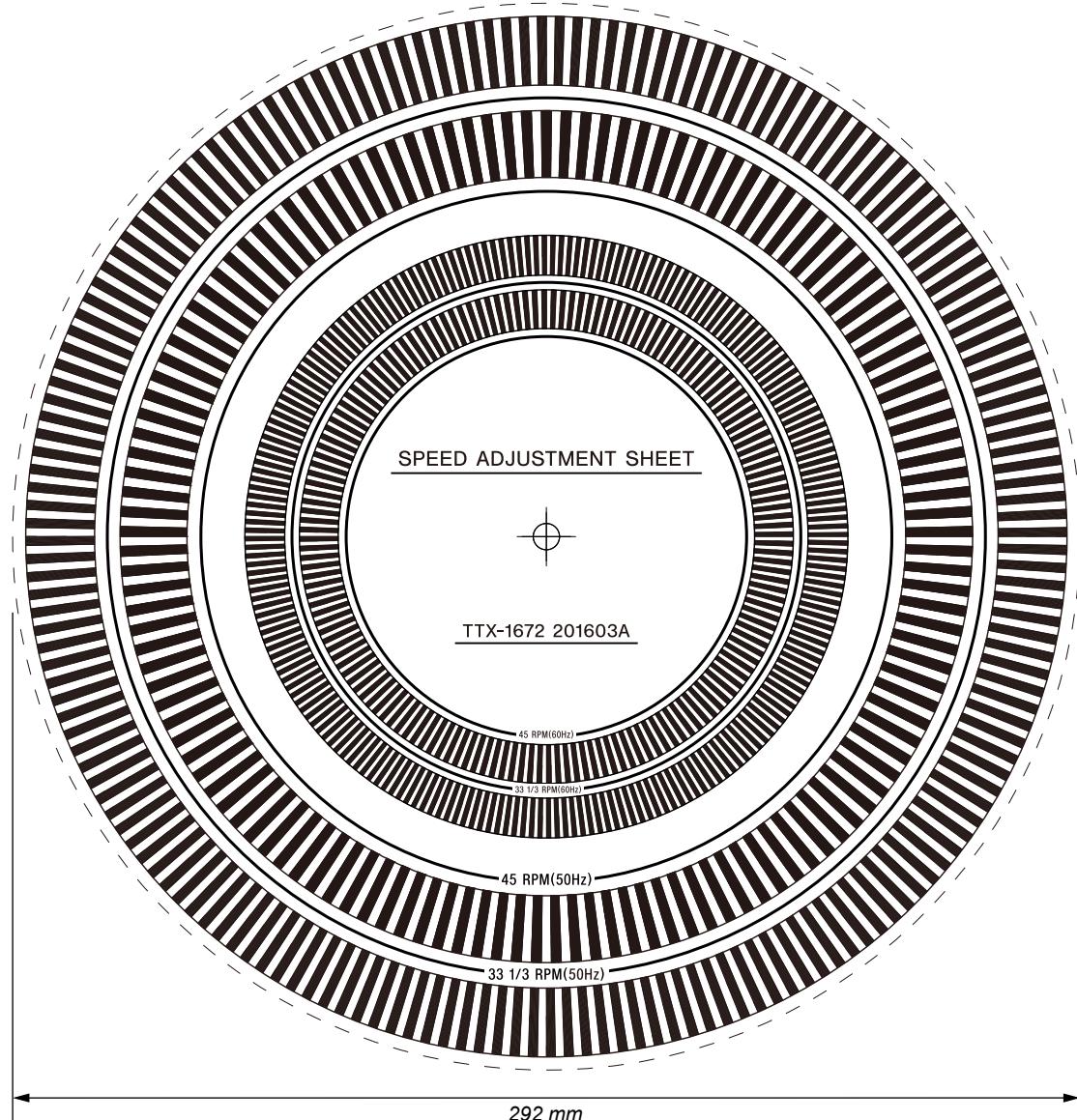
- The anti-skating adjustment is required to apply proper anti-skating force that cancels out the inward force produced by the spinning platter while a vinyl record is being played.
- You need to set the anti-skating force to the same value as the stylus pressure you set in step 2.

*MEMO*

**SPEED ADJUSTMENT SHEET (STROBOSCOPE)**

Used in electrical adjustment (refer to page 15).

Please enlarge to become diameter 292 mm. It will be 292 mm in the 200 % enlarge. Please adjust if necessary.

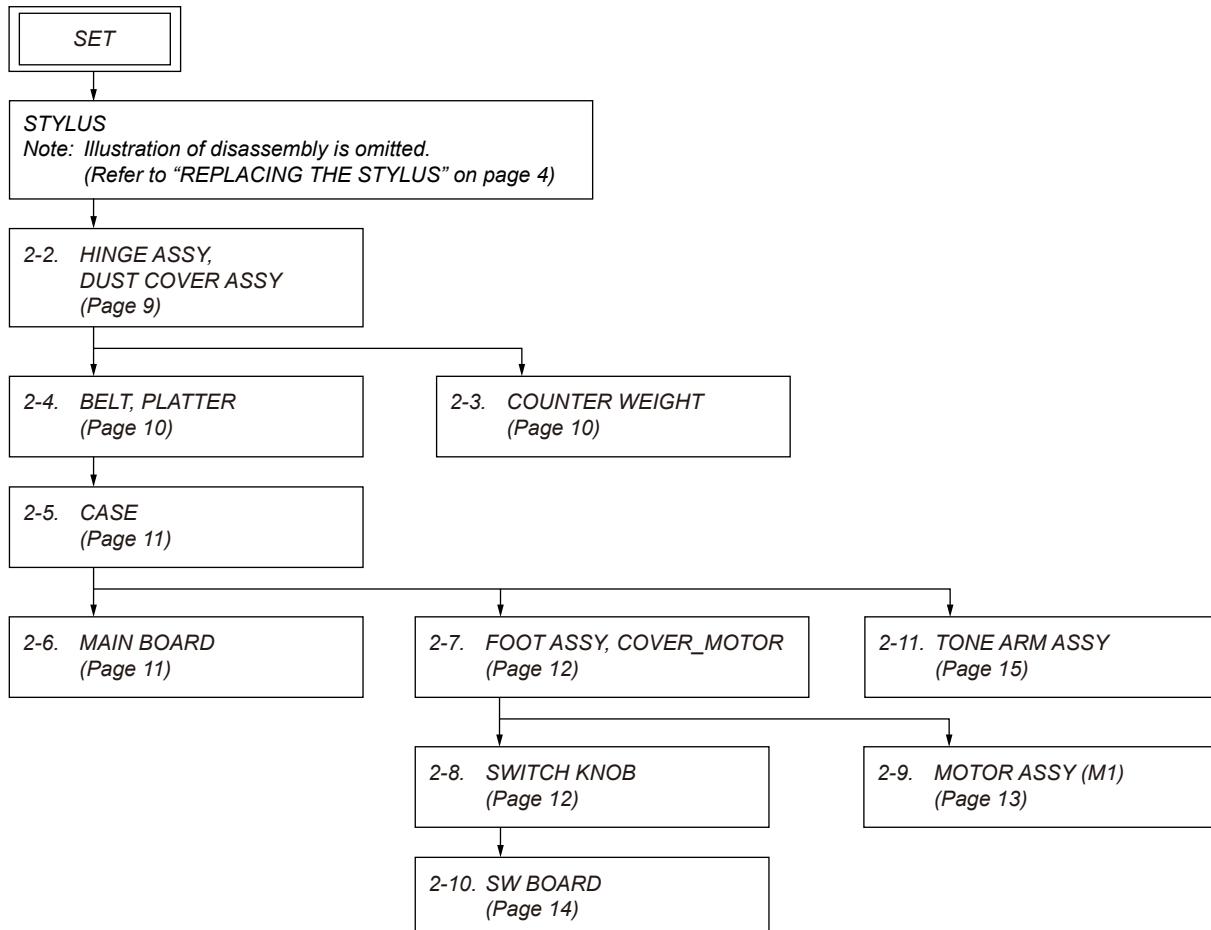


*MEMO*

## SECTION 2 DISASSEMBLY

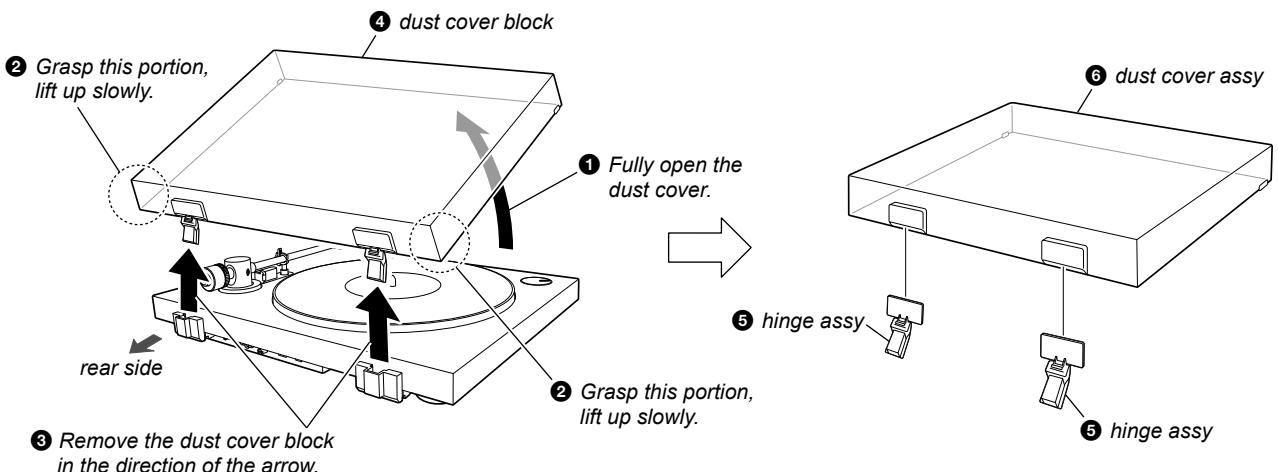
- This set can be disassembled in the order shown below.

### 2-1. DISASSEMBLY FLOW

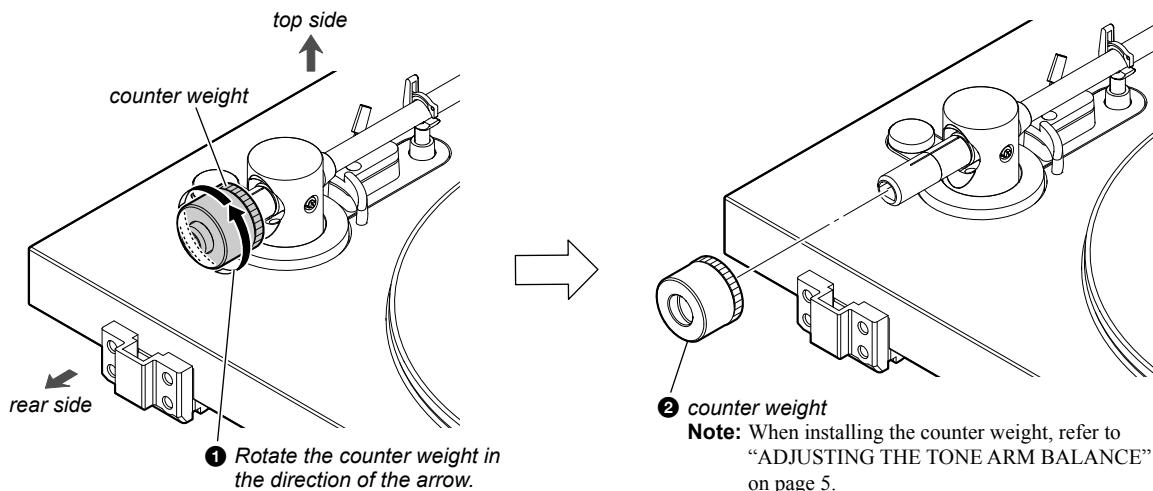


**Note:** Follow the disassembly procedure in the numerical order given.

### 2-2. HINGE ASSY, DUST COVER ASSY



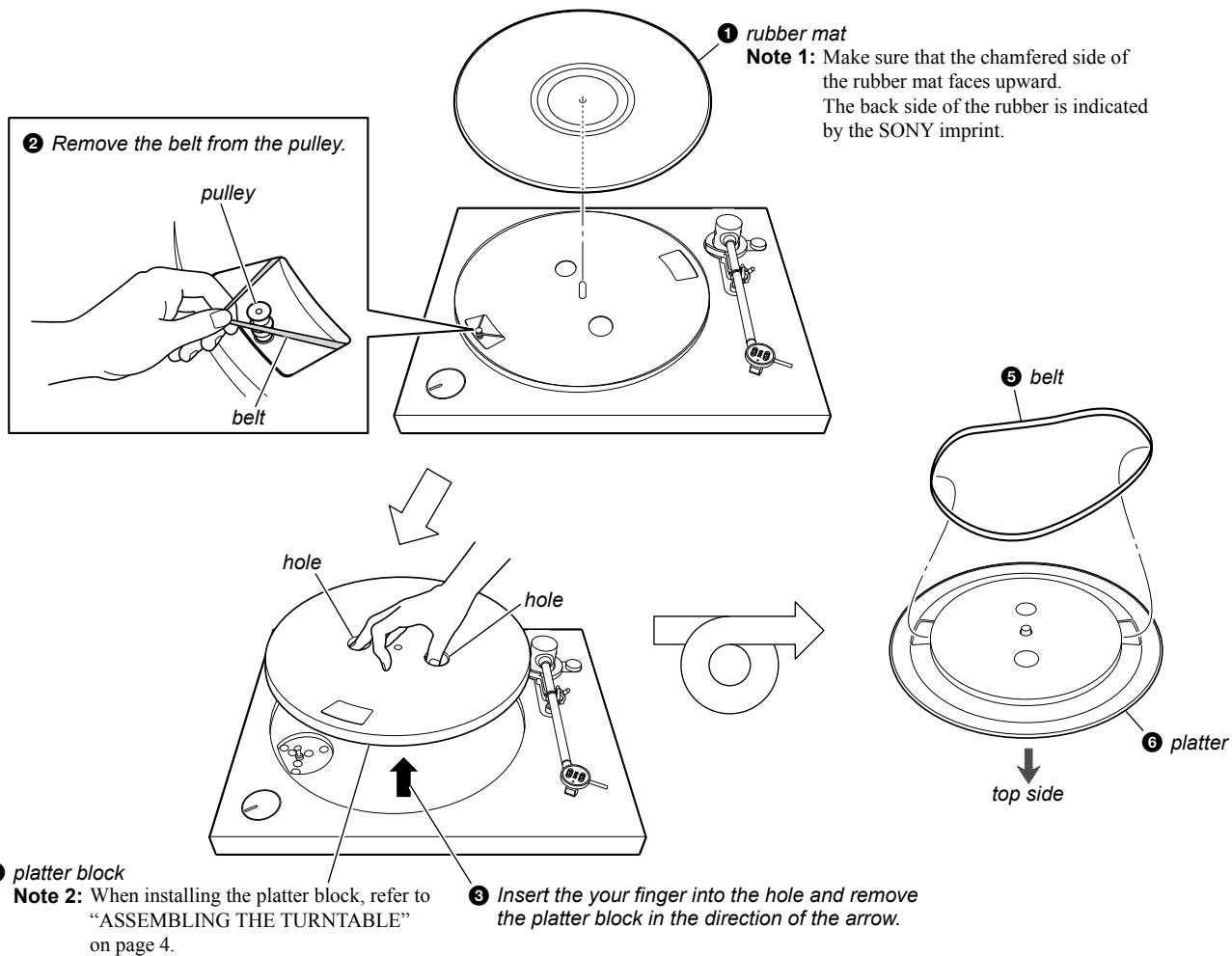
## 2-3. COUNTER WEIGHT



② counter weight

**Note:** When installing the counter weight, refer to "ADJUSTING THE TONE ARM BALANCE" on page 5.

## 2-4. BELT, PLATTER

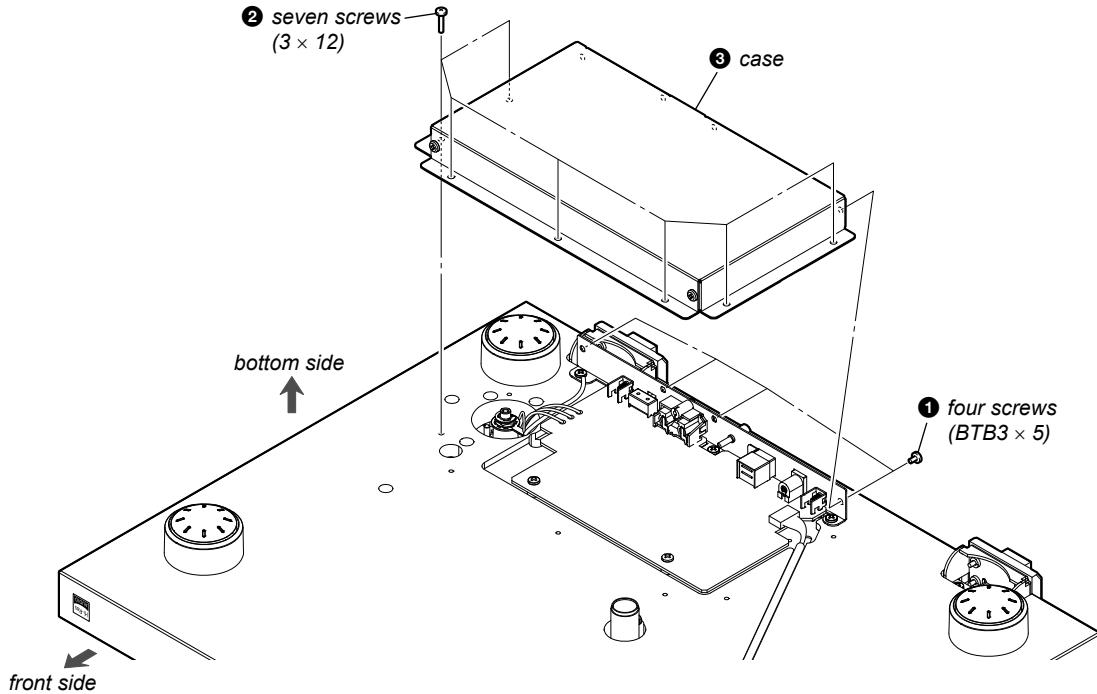


④ platter block

**Note 2:** When installing the platter block, refer to "ASSEMBLING THE TURNTABLE" on page 4.

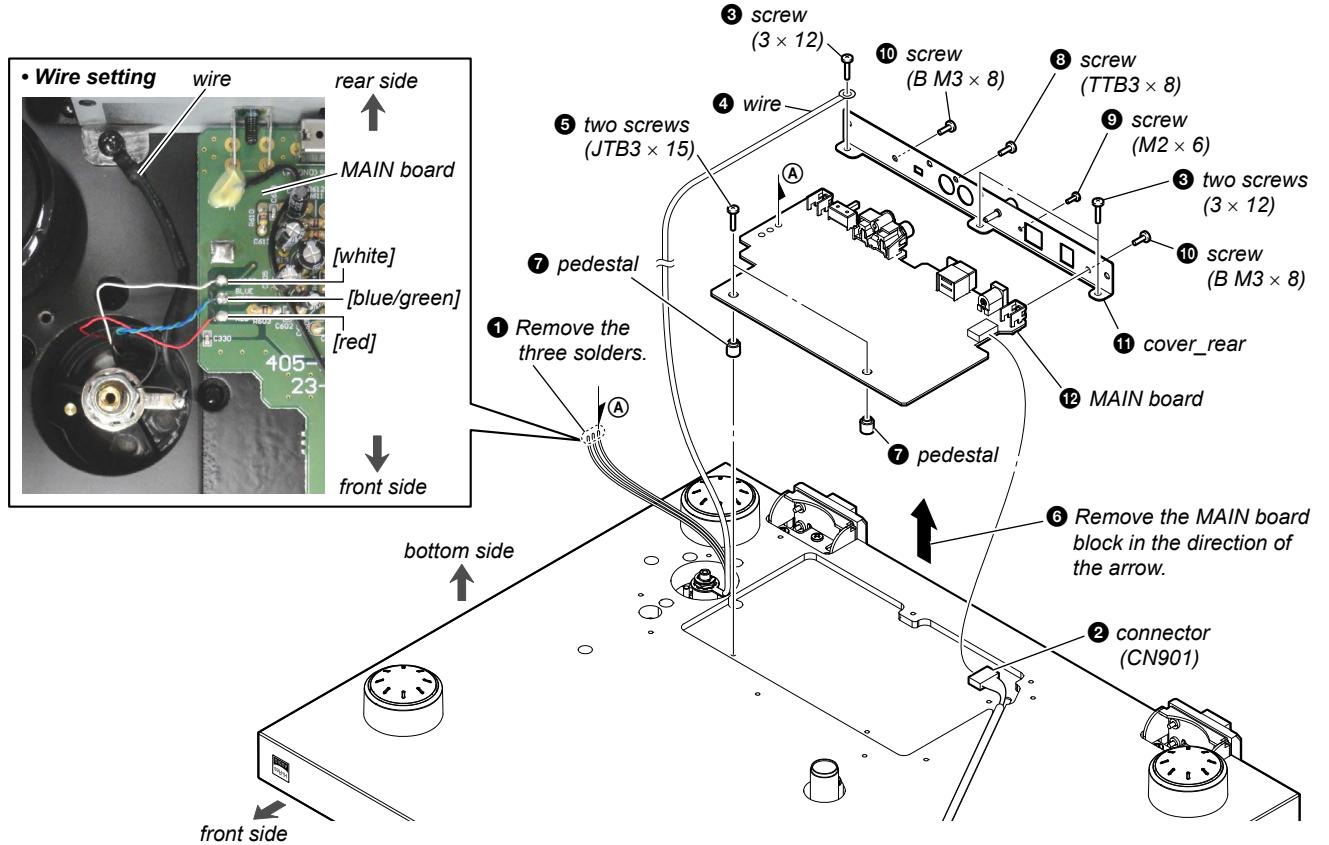
## 2-5. CASE

**Note:** When turning the main unit over, refer to "NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT" on page 3.



## 2-6. MAIN BOARD

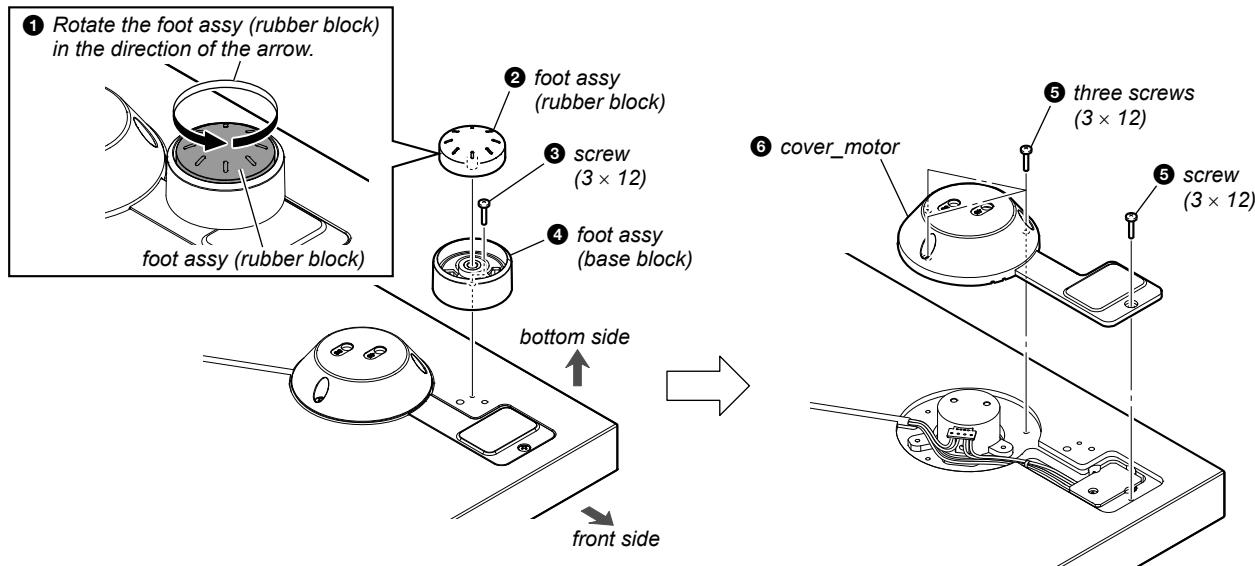
**Note:** When turning the main unit over, refer to "NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT" on page 3.



## 2-7. FOOT ASSY, COVER\_MOTOR

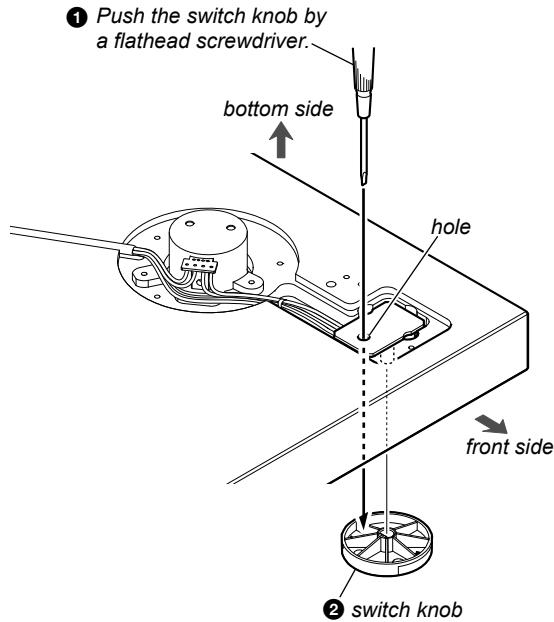
**Note 1:** When turning the main unit over, refer to “NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT” on page 3.

**Note 2:** All four foot assys (rubber + base) can be removed using the same procedure.

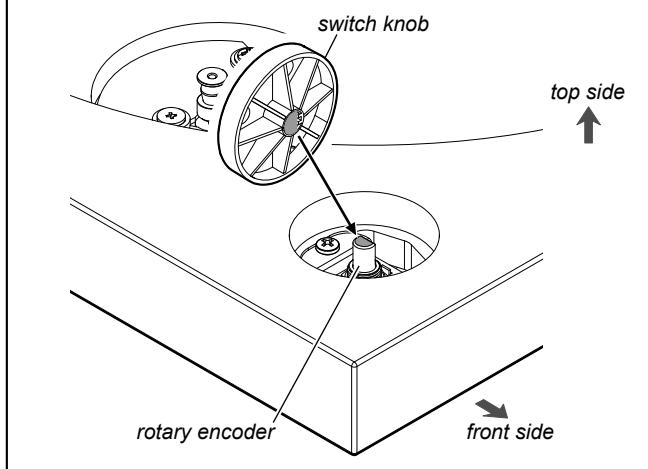


## 2-8. SWITCH KNOB

**Note:** When turning the main unit over, refer to “NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT” on page 3.



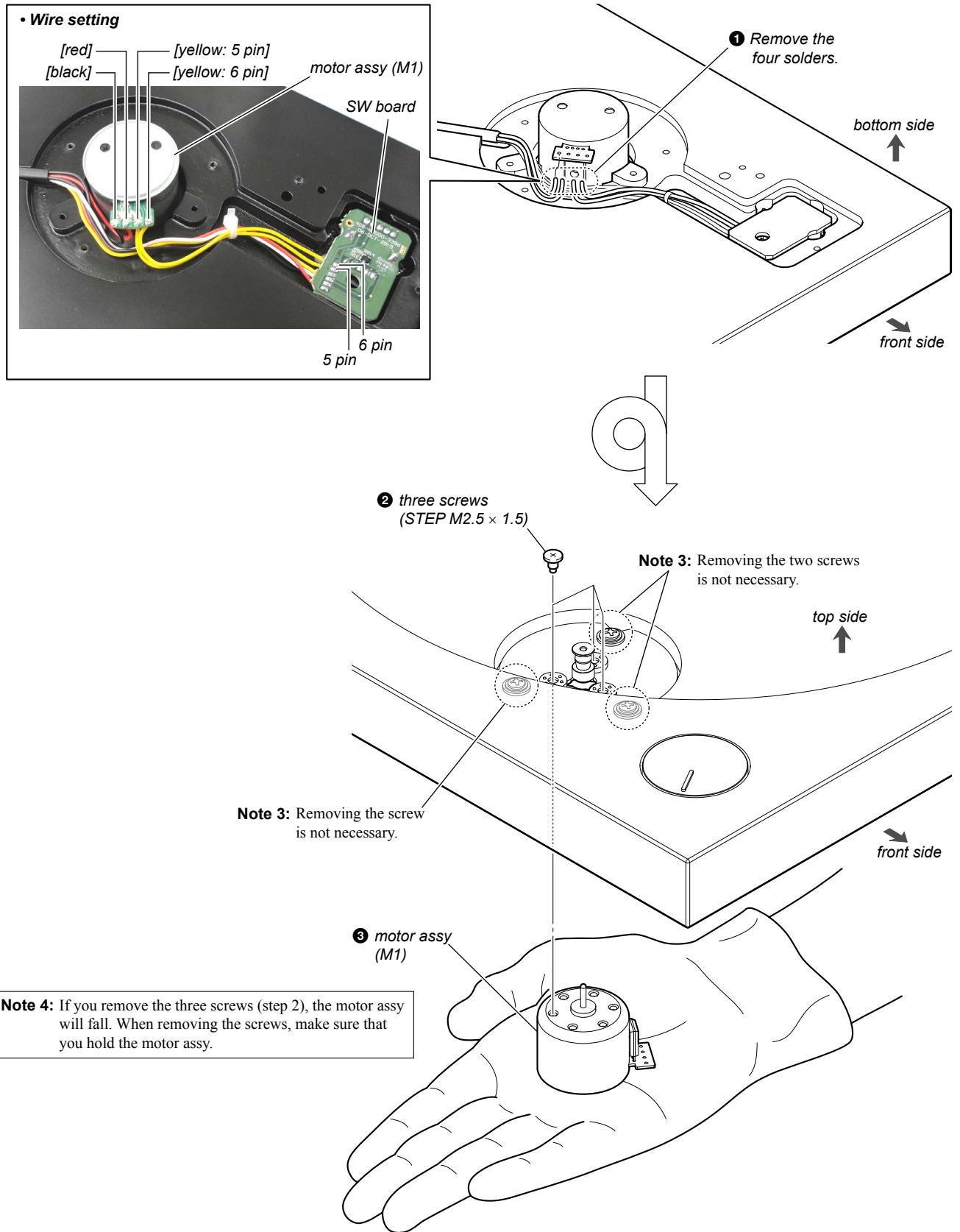
- **How to install the switch knob**  
When installing the switch knob to the rotary encoder, align the directions of the D-shaped tip of the rotary encoder and the D-shaped notch at the inner side of the switch knob.



## 2-9. MOTOR ASSY (M1)

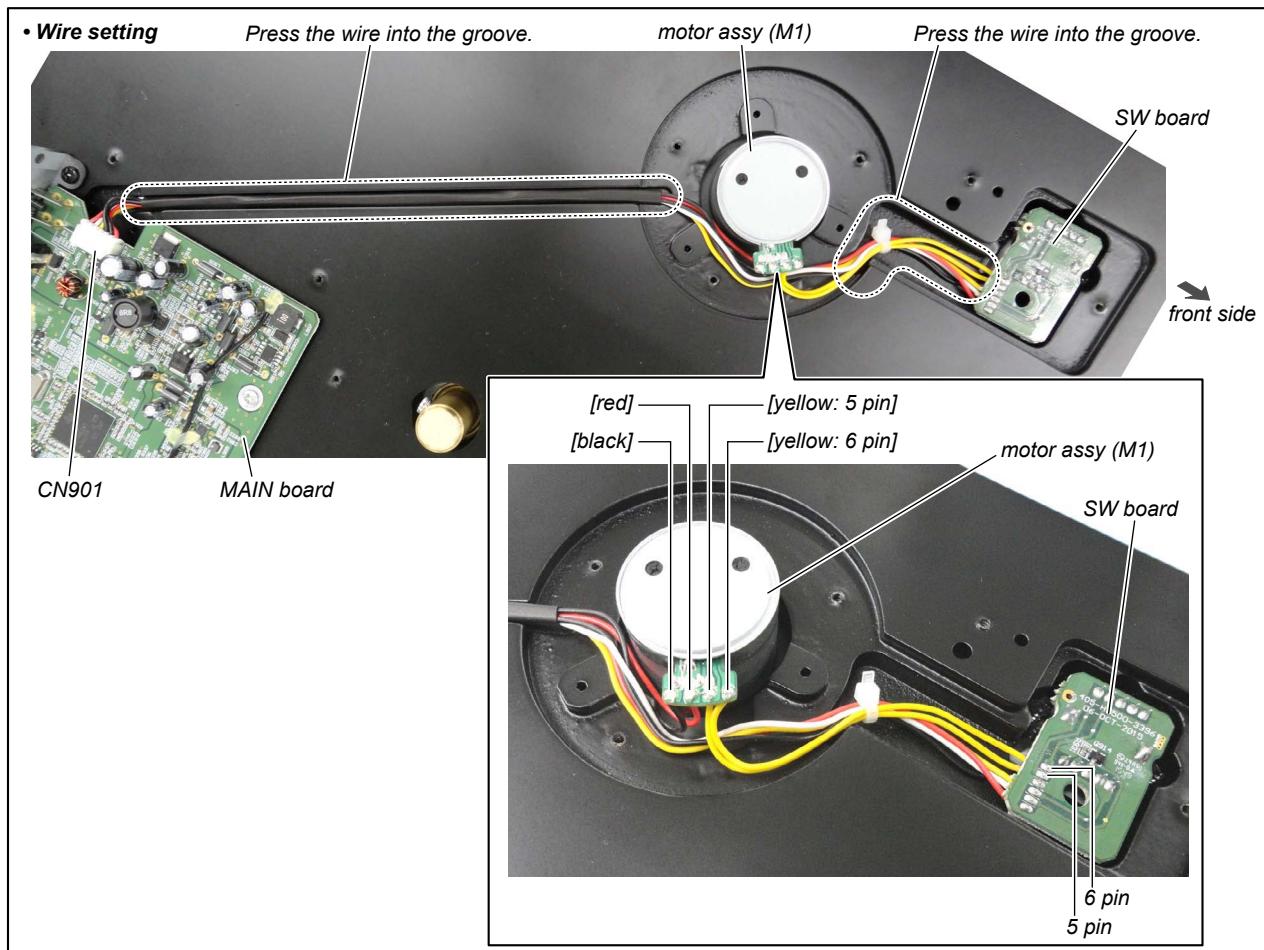
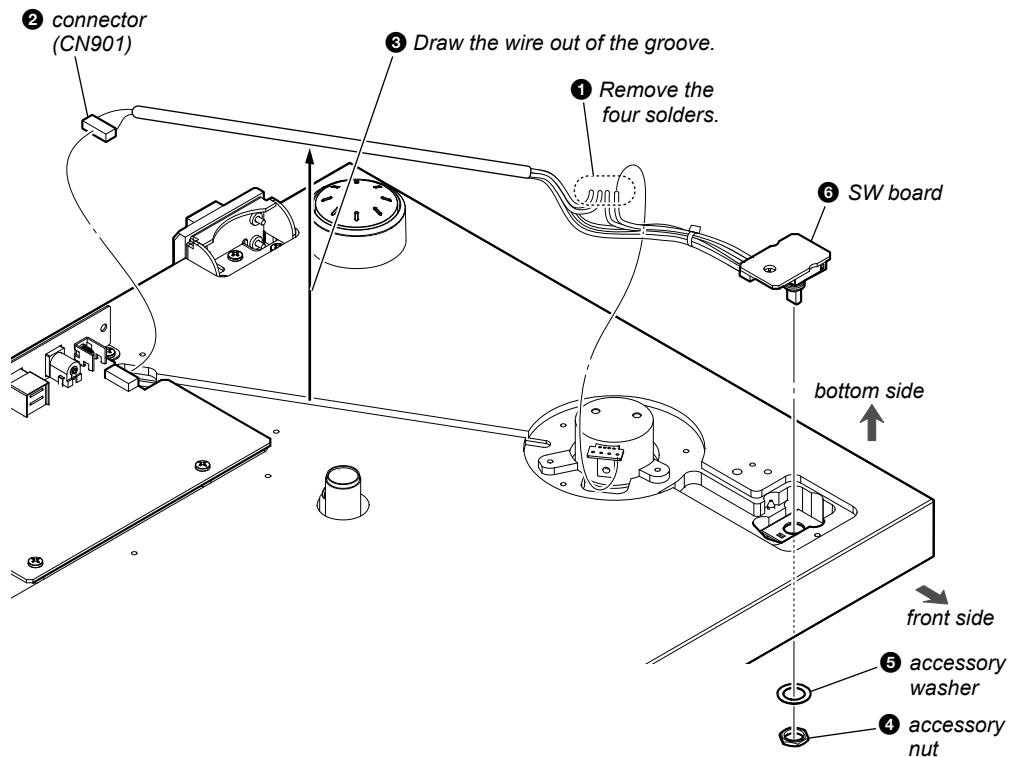
**Note 1:** When turning the main unit over, refer to “NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT” on page 3.

**Note 2:** When replacing the motor assy, refer to “DC MOTOR SPEED ADJUSTMENT” on page 15.



## 2-10. SW BOARD

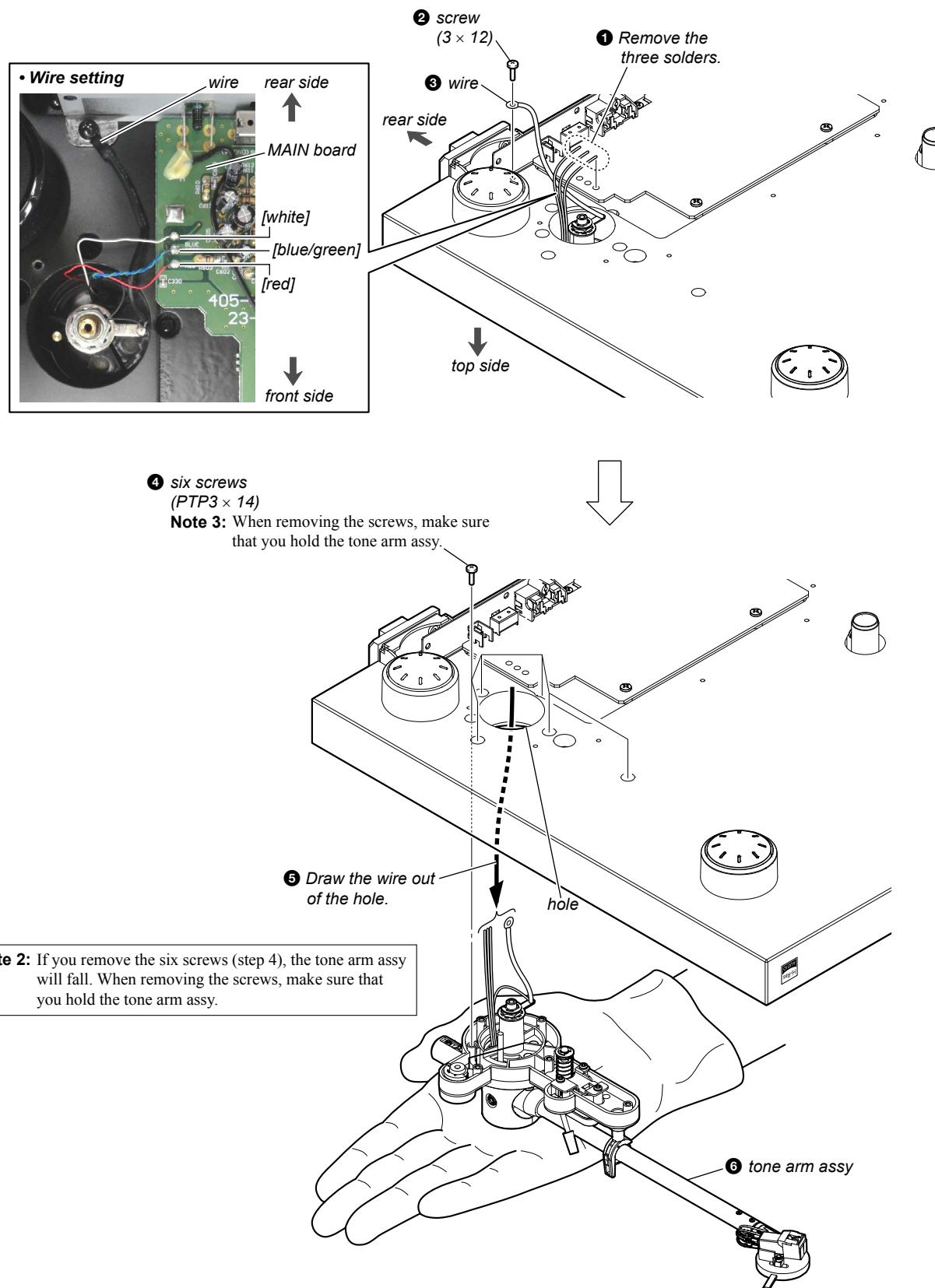
**Note:** When turning the main unit over, refer to "NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT" on page 3.



## SECTION 3 ELECTRICAL ADJUSTMENT

### 2-11. TONE ARM ASSY

**Note 1:** When turning the main unit over, refer to "NOTE IN THE CASE OF THE REVERSING THE MAIN UNIT" on page 3.

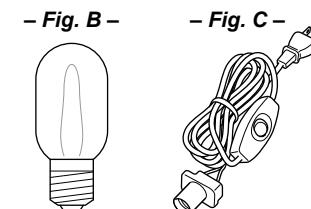
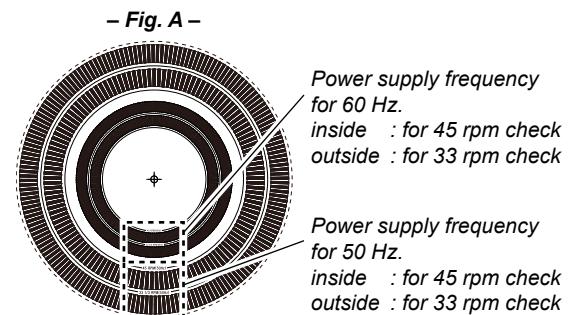


### DC MOTOR SPEED ADJUSTMENT

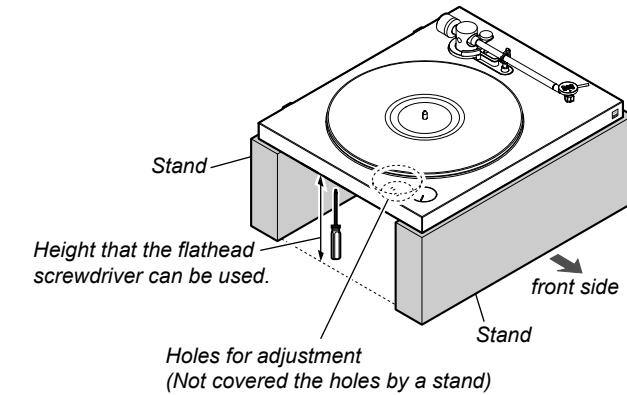
When replace the motor, perform the DC motor speed adjustment.

#### Necessary equipment:

- Speed adjustment sheet (stroboscope) (Fig A)
- Note:** Enlarge "SPEED ADJUSTMENT SHEET (STROBOSCOPE)" of page 7 and print it.
- LED light bulb without the inverter (Fig. B)
- LED light bulb socket (Fig. C)
- Insulation flathead screwdriver for resistor adjustment
- Stand for putting the main unit

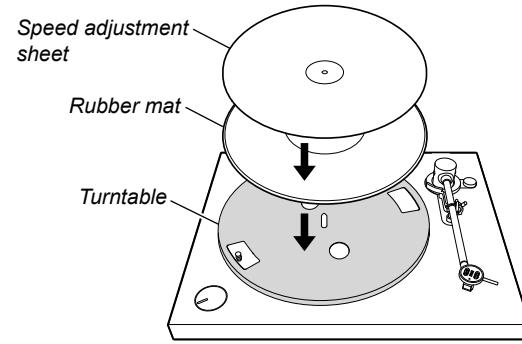


#### Installation method:

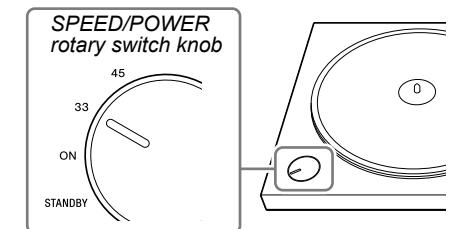


#### Procedure:

1. Installing the main unit by referring to "Installation method".
2. Place the rubber mat onto the turntable, and place the speed adjustment sheet (stroboscope) onto it.

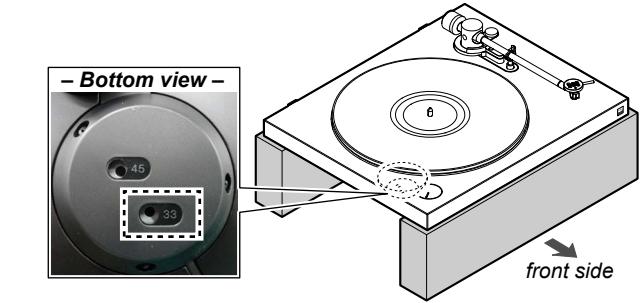


3. The turntable is rotated at a rotation speed 33 rpm.

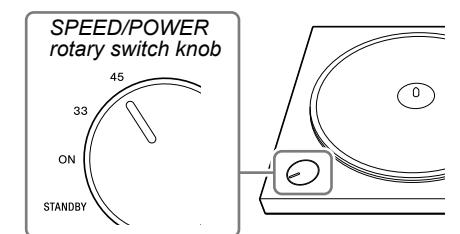


4. Connect the socket fitted with a LED light bulb into an electrical outlet.
5. The LED light bulb is lit near to the turntable.
6. Insert the insulation flathead screwdriver for resistor adjustment into screw hole "33" at the bottom of the main unit. Adjust the turntable speed by rotating the insulation flathead screwdriver to the left or right so that the speed adjustment sheet pattern looks like it has stopped moving.

**Note 1:** Check the applicable place of the speed adjustment sheet to match the power supply frequency (50 Hz/60 Hz) that is used in the LED light bulb.

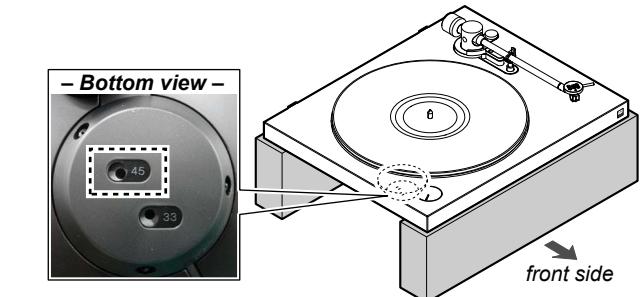


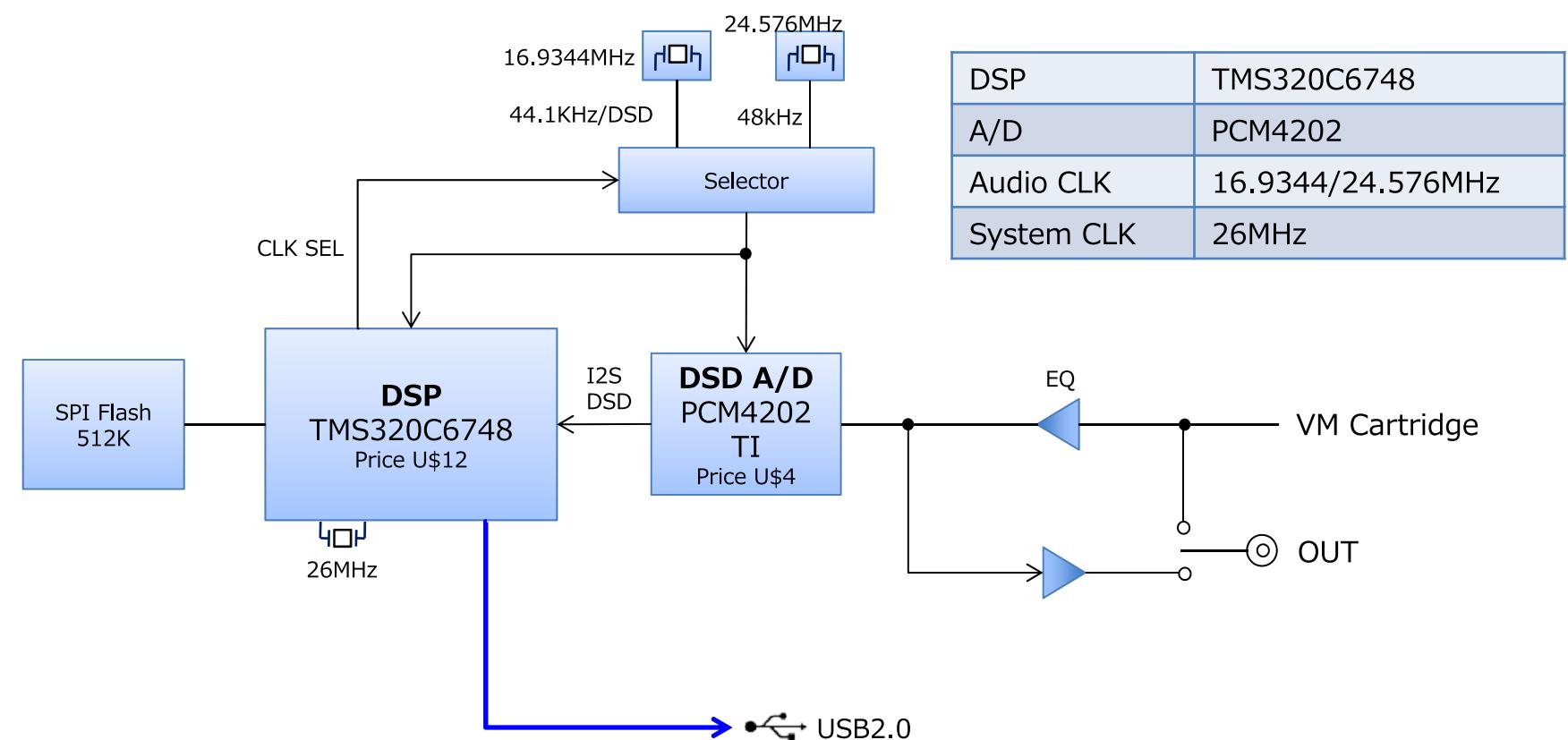
7. When you have completed the adjustment of 33 rpm, then perform the adjustment of 45 rpm.
8. The turntable is rotated at a rotation speed 45 rpm.



9. The LED light bulb is lit near to the turntable.
10. Insert the insulation flathead screwdriver for resistor adjustment into screw hole "45" at the bottom of the main unit. Adjust the turntable speed by rotating the insulation flathead screwdriver to the left or right so that the speed adjustment sheet pattern looks like it has stopped moving.

**Note 2:** Check the applicable place of the speed adjustment sheet to match the power supply frequency (50 Hz/60 Hz) that is used in the LED light bulb.



**SECTION 4  
DIAGRAMS**
**4-1. BLOCK DIAGRAM**

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**  
**(In addition to this, the necessary note is printed in each block.)**

**For Printed Wiring Boards.**

**Note:**

- : Pattern from the side which enables seeing.  
 (The other layers' patterns are not indicated.)

**Caution:**

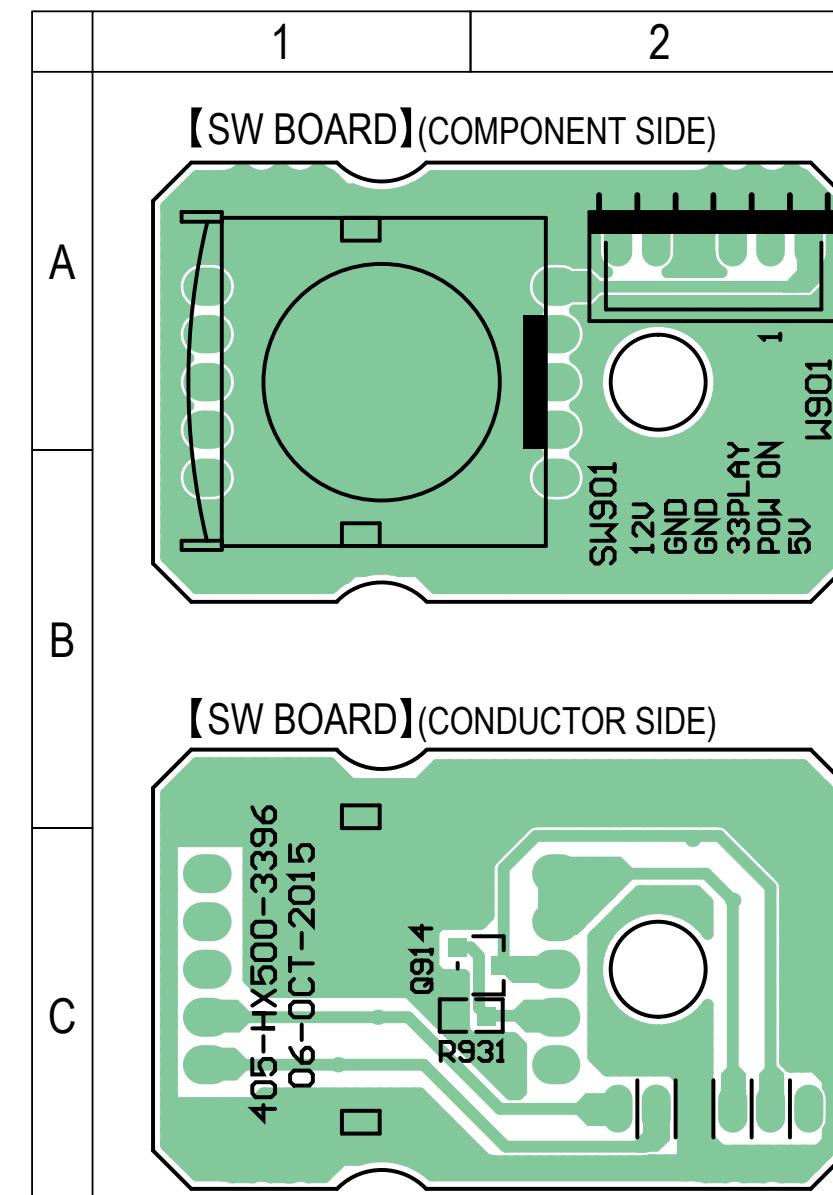
Pattern face side: Parts on the pattern face side seen  
 (Conductor Side) from the pattern face are indicated.  
 Parts face side: Parts on the parts face side seen from  
 (Component Side) the parts face are indicated.

**For Schematic Diagrams.**

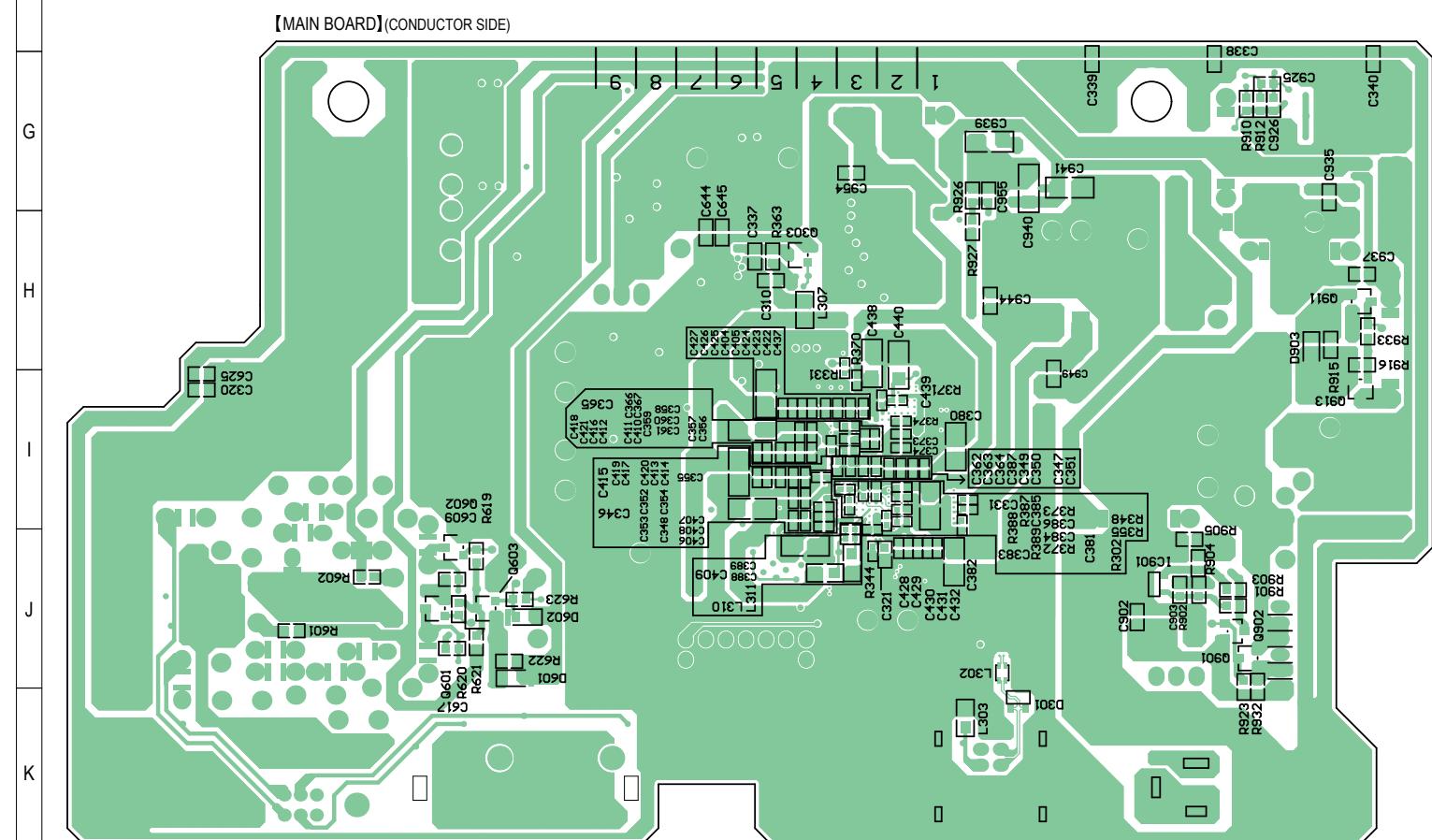
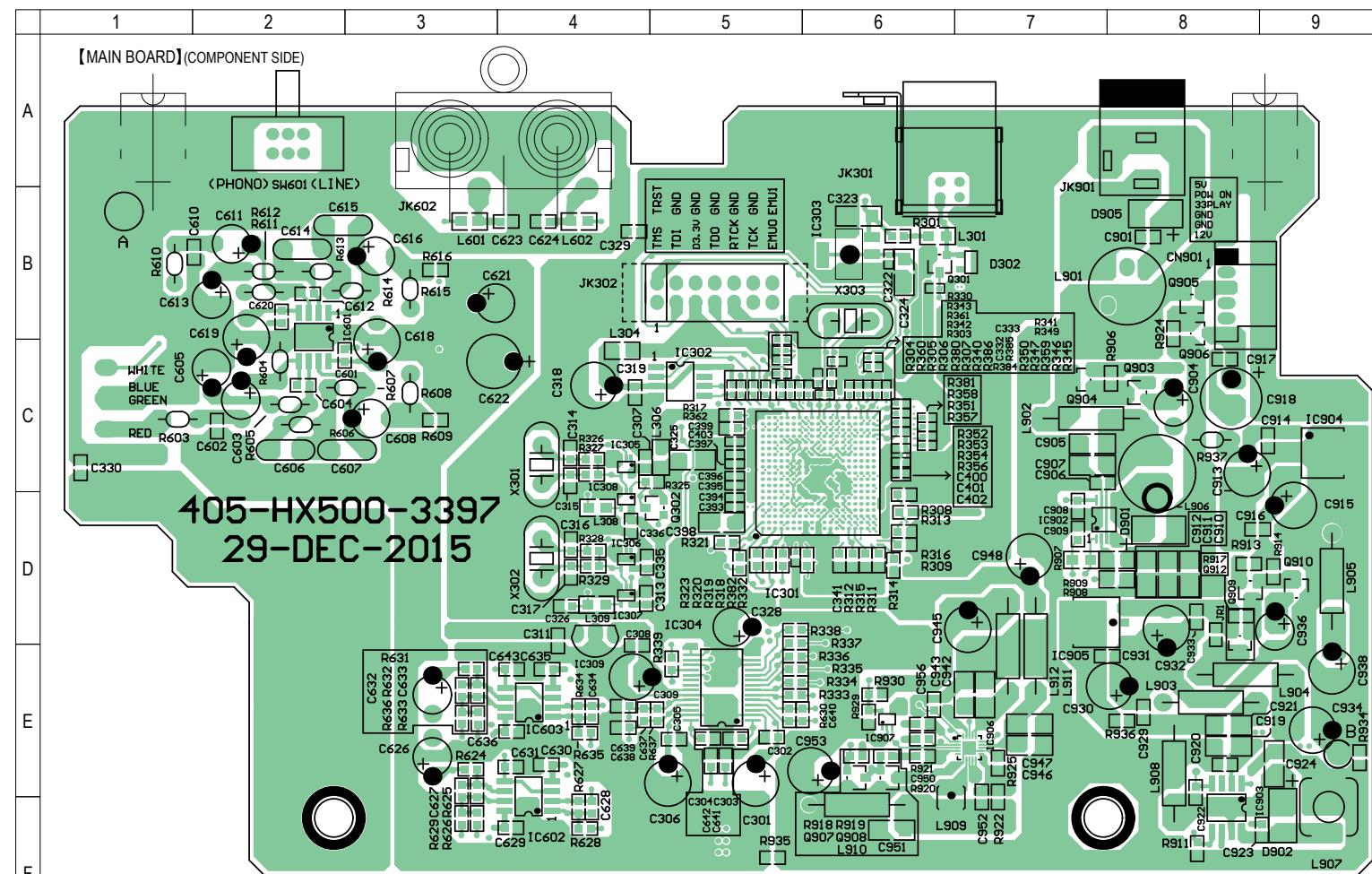
**Note:**

- All capacitors are in  $\mu\text{F}$  unless otherwise noted. (p:  $\text{pF}$ )  
 50  $\text{WV}$  or less are not indicated except for electrolytics and tantalums.
- All resistors are in  $\Omega$  and 1/4  $\text{W}$  or less unless otherwise specified.

**4-2. PRINTED WIRING BOARD - SW Board - • Uses unleaded solder.**

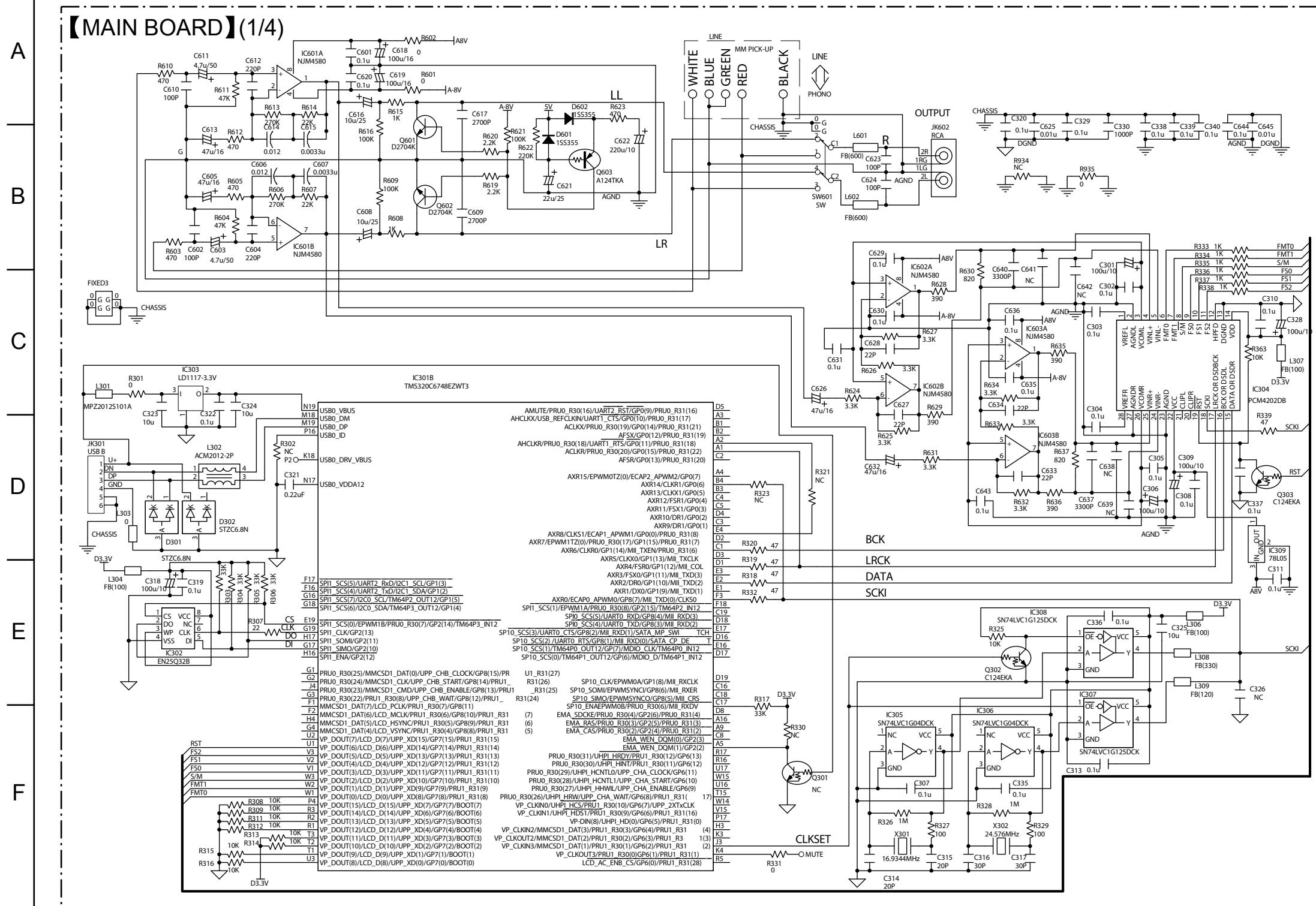


## 4-3. PRINTED WIRING BOARD - MAIN Board - • Uses unleaded solder.



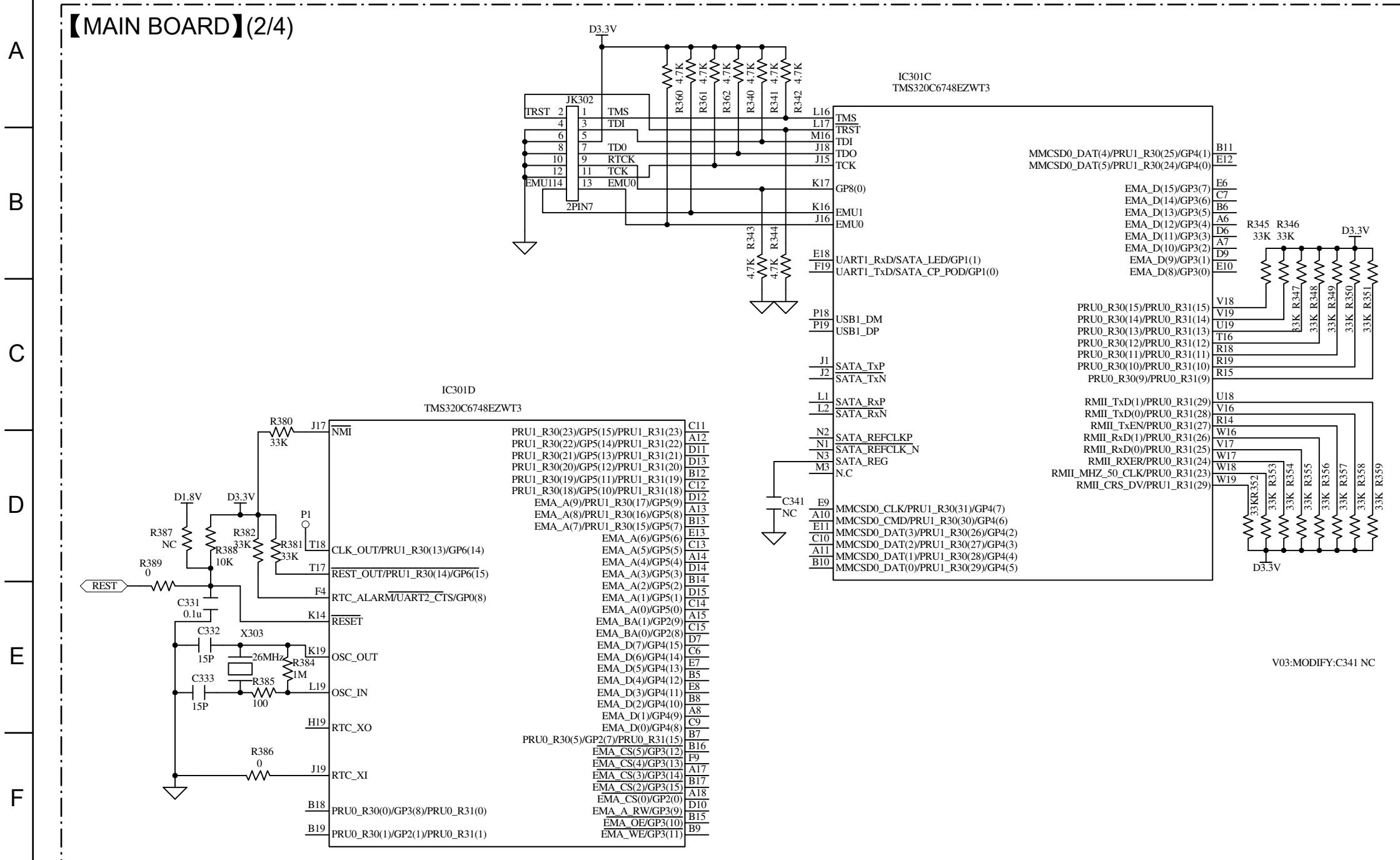
#### 4-4. SCHEMATIC DIAGRAM - MAIN Section (1/4) .

1            2            3            4            5            6            7            8            9

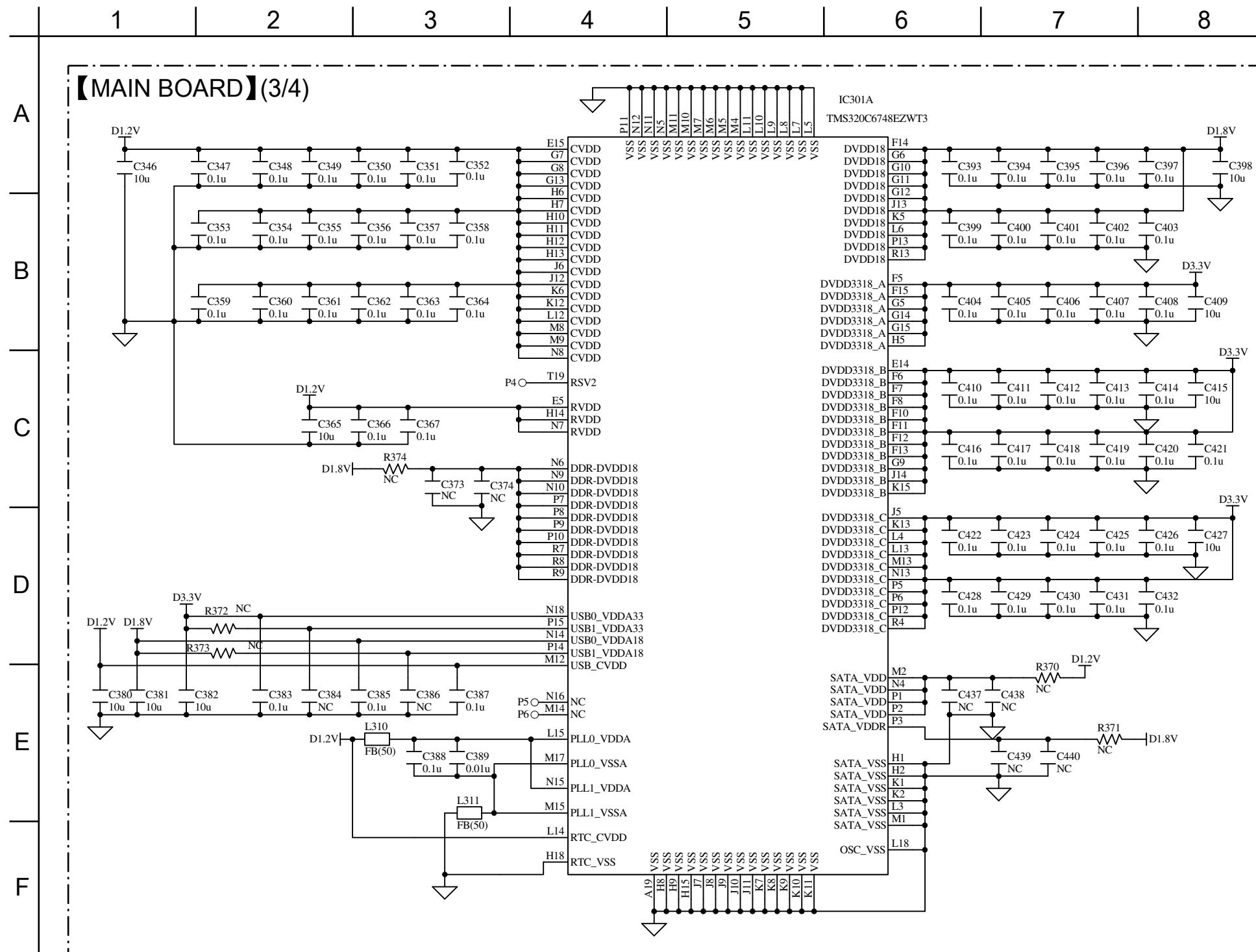


## 4-5. SCHEMATIC DIAGRAM - MAIN Section (2/4) -

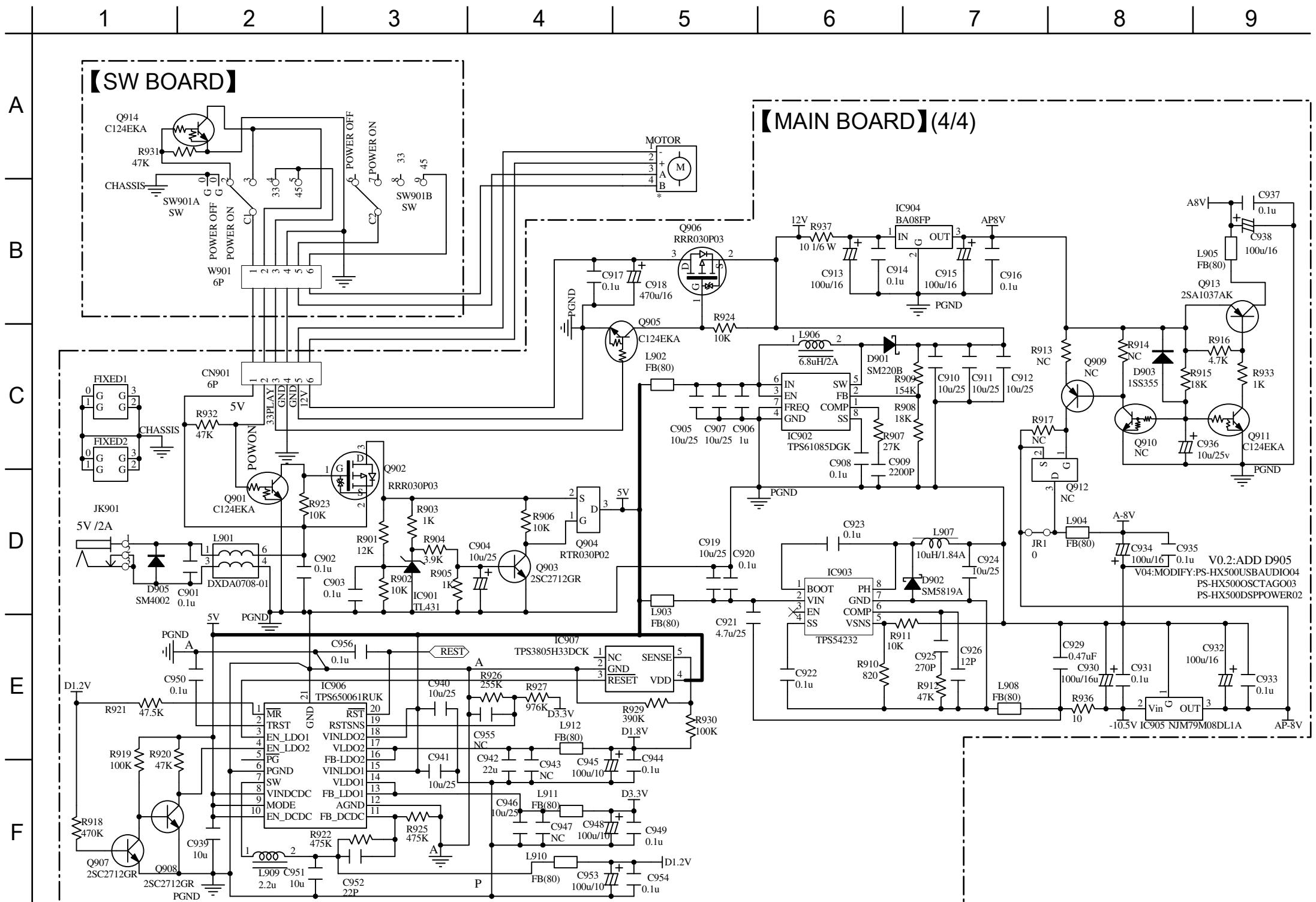
1 2 3 4 5 6 7 8 9



## 4-6. SCHEMATIC DIAGRAM - MAIN Section (3/4) -



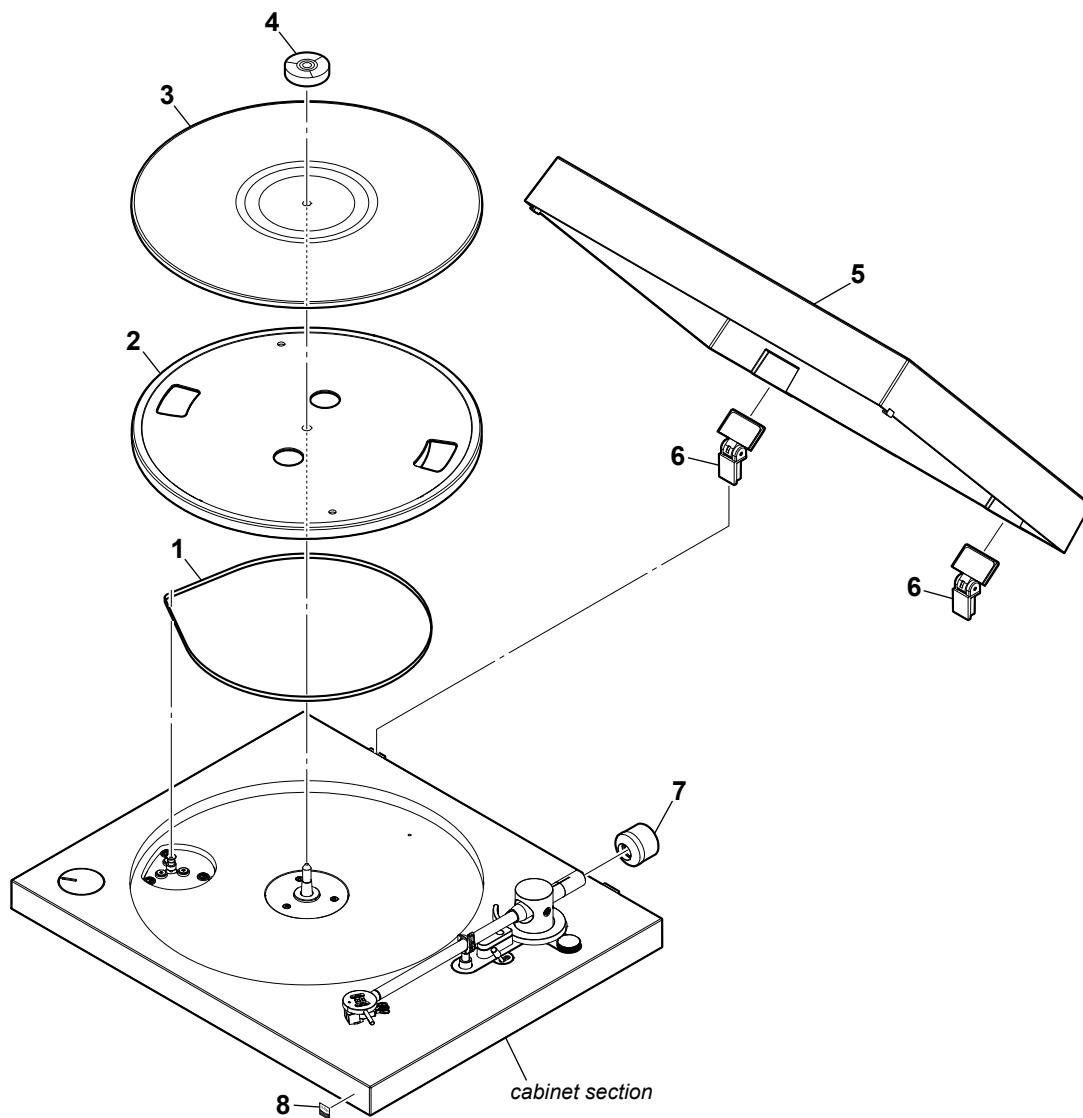
## 4-7. SCHEMATIC DIAGRAM - MAIN Section (4/4) -



## SECTION 5 EXPLODED VIEWS

**Note:**

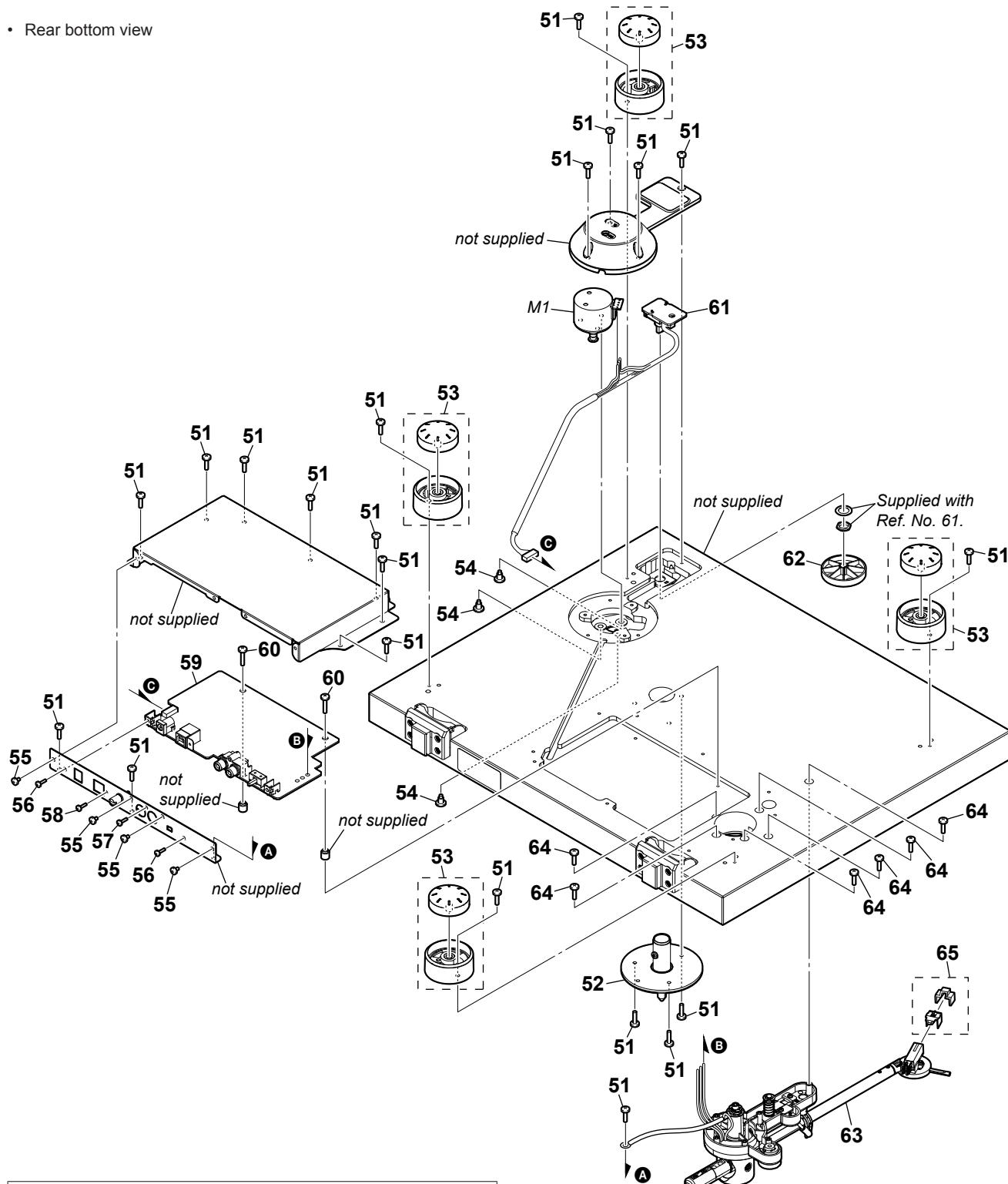
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "\*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Color Indication of Appearance Parts Example:  
KNOB, BALANCE (WHITE) . . . (RED)  
 ↑                                   ↑  
 Parts Color Cabinet's Color

**5-1. OVERALL SECTION**

Ref. No.	Part No.	Description	Remark	Ref. No.	Part No.	Description	Remark
1	9-885-117-87	BELT (Drive belt)		6	9-885-209-99	HINGE ASSY (Dust cover hinge)	
2	9-885-209-94	PLATTER		7	9-885-210-00	COUNTER WEIGHT	
3	9-885-209-95	RUBBER MAT PACKING ASSY (Rubber mat)		8	4-477-465-31	HI-RES LABEL	
4	9-885-117-84	45 RPM ADAPTER					
5	9-885-209-98	DUST COVER ASSY (Including Rubbers) (Dust cover)					

## 5-2. CABINET SECTION

- Rear bottom view



**Note:** The stylus (Ref. No. 65) is a high precision component. Handle it with care to avoid damage.

Ref. No.	Part No.	Description	Remark
51	9-885-210-18	SCREW (3X12)	
52	9-885-210-06	SPINDLE ASSY	
53	9-885-210-03	FOOT ASSY	
54	9-885-210-21	SCREW (M2.5X1.5, STEP)	
55	9-885-210-20	SCREW (3X5, BTB)	
56	9-885-210-14	SCREW (M3X8, B)	
57	9-885-210-13	SCREW (3X8, TTB)	
58	9-885-210-17	SCREW (M2X6)	
59	9-885-210-07	MAIN BOARD, COMPLETE	

Ref. No.	Part No.	Description	Remark
60	9-885-210-19	SCREW (3X15, JTB)	
61	9-885-210-08	SW BOARD, COMPLETE	(Including Nut, Washer, Wire)
62	9-885-210-02	SWITCH KNOB (SPEED/POWER)	
63	9-885-210-04	TONE ARM ASSY	
64	9-885-210-16	SCREW (3X14, PTP)	
65	9-885-210-05	STYLUS (Including Cover) (See Note)	
M1	9-885-117-73	MOTOR ASSY	

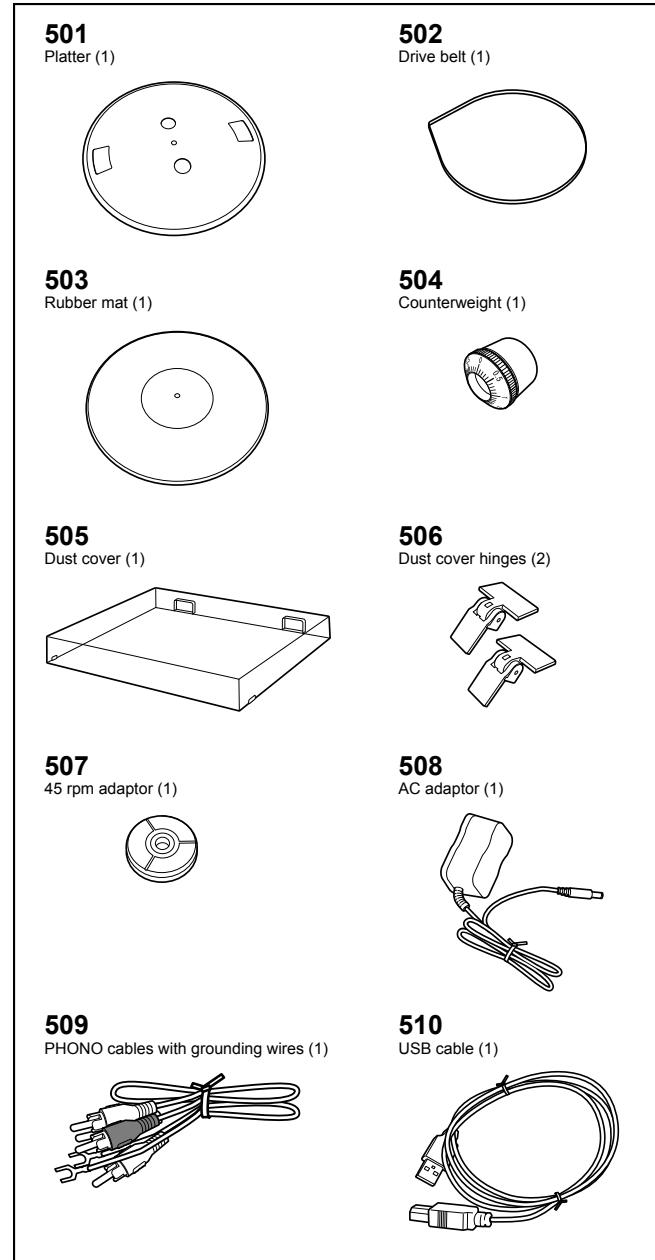
## SECTION 6 ACCESSORIES

<u>Ref. No.</u>	<u>Part No.</u>	<u>Description</u>	<u>Remark</u>
	4-585-834-11	MANUAL, INSTRUCTION (ENGLISH)	(US, CND, UK)
	4-585-834-21	MANUAL, INSTRUCTION (FRENCH, SPANISH)	(US, CND, AEP)
	4-585-834-31	MANUAL, INSTRUCTION (GERMAN, DUTCH, ITALIAN, POLISH) (AEP)	
501	9-885-209-94	PLATTER	
502	9-885-117-87	BELT (Drive belt)	
503	9-885-209-95	RUBBER MAT PACKING ASSY (Rubber mat)	
504	9-885-210-00	COUNTER WEIGHT	
505	9-885-209-98	DUST COVER ASSY (Including Rubbers) (Dust cover)	
506	9-885-209-99	HINGE ASSY (Dust cover hinge) (1 piece)	
507	9-885-117-84	45 RPM ADAPTER	
△ 508	9-885-210-09	AC ADAPTOR (UC) (HK-AR-050A200-US) (US, CND)	
△ 508	9-885-210-10	AC ADAPTOR (CEL) (HK-AR-050A200-EU) (AEP)	
△ 508	9-885-210-11	AC ADAPTOR (CEK) (HK-AR-050A200-GB) (UK)	
509	9-885-209-97	PHONO CABLE (PHONO cables with grounding wires)	
510	9-885-209-96	USB CABLE (2 m)	

The components identified by mark △ or dotted line with mark △ are critical for safety.

Replace only with part number specified.

Les composants identifiés par une marque △ sont critiques pour la sécurité.  
Ne les remplacer que par une pièce portant le numéro spécifié.



## REVISION HISTORY